

CLAIMS:

1. An organic light emitting diode (OLED) display device, the display device having a plurality of pixels each comprising at least two sub-pixels of different types, a first sub-pixel type comprising an OLED device including a first type of OLED material and a second sub-pixel type comprising an OLED device including a second type of OLED material, and wherein at least one of said first and second types of sub-pixel comprises a plurality of series-connected OLED devices.
2. An OLED display device as claimed in claim 1 wherein a said pixel has a common power supply line for supplying power to said at least two sub-pixels.
3. An OLED display device as claimed in claim 2 wherein an OLED device including said first type of OLED material has a lower drive voltage than an OLED device including said second type of OLED material, and wherein at least said first type of sub-pixel comprises series connected devices.
4. An OLED display device as claimed in any preceding claim wherein each of said plurality of series connected devices has substantially the same light emissive area.
5. An OLED display device as claimed in any preceding claim wherein said first and second types of OLED material have different peak emission wavelengths.
6. An OLED display device as claimed in any preceding claim wherein a said pixel comprises three sub-pixels of different types, a said pixel including a third sub-pixel type comprising an OLED device including a third type of OLED material.
7. An OLED display device as claimed in claim 6 wherein at least two of said sub-pixel types comprise a plurality of series-connected OLED devices.
8. An OLED display device as claimed in any preceding claim further comprising a drive transistor associated with each sub-pixel.

9. An OLED display device as claimed in claim 1 or 2 wherein a series-connection configuration of OLED devices of said first and second sub-pixel types is determined by a supply or operating voltage for which the display device is designed.
10. An OLED display device as claimed in any one of claims 1 to 9 wherein said first type of OLED material comprises a fluorescent material.
11. An OLED display device as claimed in claim 10 wherein said second type of OLED material comprises a phosphorescent OLED material.
12. An OLED display device as claimed in any one of claims 1 to 9 wherein said first type of OLED material comprises a polymer material.
13. An OLED display device as claimed in claim 12 wherein said second type of OLED material comprises a dendrimer OLED material or small molecule OLED material.
14. An active matrix colour display incorporating the display device of any preceding claim.
15. A colour active matrix OLED display having a plurality of pixels, each pixel comprising a red, green and blue sub-pixel powered from a common supply line and having an associated sub-pixel driver transistor, at least one of said red, green and blue sub-pixels comprising two or more series connected organic light emitting diodes (OLEDs).
16. A colour active matrix OLED display as claimed in claim 15 wherein power requirements of said red, green and blue sub-pixels are balanced such that a power requirement of a said pixel including said associated sub-pixel driver transistors, with said red, green and blue sub-pixels illuminated, is less than a power requirement a said pixel would have for substantially the same perceived brightness were none of said sub-pixels to comprise series-connected OLEDs.

17. A method of designing an organic light emitting diode (OLED) display device, the display device having a plurality of pixels each comprising at least two sub-pixels of different types, a first sub-pixel type comprising an OLED device including a first type of OLED material and a second sub-pixel type comprising an OLED device including a second type of OLED material, and wherein at least one of said first and second types of sub-pixel comprises a plurality of series-connected OLED devices, the method comprising selecting whether said first and second types of sub-pixel comprise series-connected OLED devices dependent upon a drive voltage for a said OLED device of a said sub-pixel.